What do YOU think about this car?

Perception and meaning of automotive design in New Zealand and Taiwan

Wen-Chun Diana Wang

A thesis submitted for the degree of Master of Design at
College of Creative Arts, Massey University, Wellington, New Zealand

February 2008
Approximate word count: 35,700

ABSTRACT

This investigation examines the relationship between perception and meaning on automotive exterior designs in New Zealand and Taiwan. The Visual Product Experience framework [Warell, 2007] categorises perception and meaning *Impression, Recognition, Appreciation, Association* and *Comprehension*. This study uses the VPE framework to examine the perception and meaning of the specific car models from BMW and Lexus in two markets. It did so through the collection of qualitative data from questionnaires conducted through a semi-structured interview, with a total of 60 participants in automotive-related events in both New Zealand and Taiwan.

The background of this project was established through the secondary research that explored a wide range of topics including the theoretical knowledge review, characteristics of the markets and design philosophies of the car brands. Through these researches, the differences in the market characteristics and design focuses of the brand BMW and Lexus are verified.

The findings indicate that the BMW 320i has strong visual impression on consumers in both markets with regard to aesthetics and identity. This strong visual impression was attributed by the overall coherent visual composition of the 320i. The design features of the Lexus IS250 were more recognised by Taiwan consumers than New Zealand consumers.

The visual features designed to express and describe on both cars were perceived consistently by consumers in both market. Interestingly, the Lexus Arrowhead motif was not recognised as an overall visual appearance, but as individual details. However, the grille of the Lexus as not consistently indicated as a signifier of the Lexus brand. This was in contrast to the BMW 'Kidney Grille', which was consistently recognised as a BMW signifier.

The results of this study were consistent with the findings of the literature review. This is evident because the participants from Taiwan strongly associate the cars with their values in society. Between the two markets, differences in interpretation of the design features is apparent, Taiwan consumers appreciates smaller details more than New Zealand consumers.

The VPE framework is proven to be a highly comprehensive model in this research project. This is because it allows categorisations and hence an inclusive understanding on the design intents and analysis on the 320i/IS250 both in the secondary and primary research design and analysis.

To **K. H. Wang**

ACKNOWLEDGEMENTS

I would like to acknowledge my supervisor Associate Professor Dr Anders Warell, Massey University of Wellington for his guidance, patience and wisdom throughout this research project.

As a colleague, thank you Kenneth Young for your constructive criticism towards my research and help during my stay in Wellington. I also thank my friends and colleagues at Massey University for their support in the postgraduate programme.

To Q. Xing, thank you for all your patience with me and always being there when I needed help. Last but not least, I would like to acknowledge my family and friends in Taiwan for their encouragement and support during this study.

TABLE OF CONTENTS

Chapter 1. INTRODUCTION 1
1.1 Background and significance 1
1.2 Central proposition 2
1.3 Research aim 2
1.4 Scope of research 3
Chapter 2. METHODS – SECONDARY RESEARCH 4
2.1 Literature review 4
2.2 Design intent of cars 18
2.3 Background study – markets 31
2.4 Literature review on research methods 39
Chapter 3. METHODS – PRIMARY RESEARCH 40
3.1 Design analysis on the 320i/IS250 41
3.2 Aim of primary research 57
3.3 Research design 60
3.4 Discussion 67
Chapter 4. FINDINGS 68
4.1 BMW in New Zealand 69
4.2 BMW in Taiwan 70
4.3 Lexus in New Zealand 71
4.4 Lexus in Taiwan 72
Chapter 5. ANALYSIS AND DISCUSSION 74
5.1 Consumer perceptions on 320i/IS250 77
5.2 Perceptions between Cars 136
5.3 Comparison between market characteristics 150
5.4 Internal and External 155
Chapter 6. CONCLUSION 163
6.1 Evaluation 168
6.2 Area for further research 169
REFERENCES 170
BIBLIOGRAPHY 174

LIST OF APPENDICES

Appendix A

Glossary – terms and definition..A-2

Appendix B

Review of BMW's new design aesthetics by artists/designers in the USA by Lynn Cox (European Car Magazine)..A-4

Appendix C

Car brand backgrounds: culture and history of BMW/Lexus....................A-6

Appendix D

Market backgrounds: culture and history of New Zealand/Taiwan..........A-9

Appendix E

Design analysis: visual attributes and expression analysis......................A-12

Appendix F

Research design of questionnaires..A-16

Appendix G

Findings: full field research findings..A-38

Appendix H

Findings: summary A-90

Appendix I

Analysis and discussions..A-108

LIST OF FIGURES

Figure 2-1. List of sections relating to the research aim. 4

Figure 2-3. Relationship between the notion of Aesthetics and fields of design 6

Figure 2-4. Flow of meaning communication based on the transmission communication model by Shannon and Weaver [Monö, 1997: 43]. 10

Figure 2-5. Flow and potential disruptions of meaning communication based on the transmission communication model by Shannon and Weaver [Monö, 1997: 45]. 10

Figure 2-6. Categorisation on the communication functions of product form [Muller, 2001:301]. 11

Figure 2-7. Basic framework for design as a process of communication based on the Transmission Model by Shannon and Muller [Crilly et al,. 2004]. 11

Figure 2-8. Framework on product communication and semantics 15

Figure 2-9. (left) Basic model of product emotions by Desmet and Hekkert (2007:62). 16

Figure 2-10. (right) Framework of product experience by Desmet and Hekkert (2007:60). 16

Figure 2-11. Target market and type of vehicle for the cars in this research 18

Figure 2-12. Proportion and stance of common domestic motor vehicles. 19

Figure 2-13. Logo of the BMW Motor company [BMW International, 2007]. 20

Figure 2-14. Diagram illustrating brand-specific features of BMW on the 320i. 21

Figure 2-15. Model-specific features of the 320i 24

Figure 2-16. Lexus Logo **Figure 2-17.** Toyota Logo 25

Figure 2-18. Brand-specific design features on the IS250. 28

Figure 2-19. Indications of model-specific features on the IS250. 29

Figure 2-20. Cultural characteristics of various countries including New Zealand and Taiwan [Schwartz, 1992] 32

Figure 2-21. Parallel characteristics in culture and tradition between Western and South-East Asia [Wong and Ahuvia, 1998:429] 33

Figure 2-22. Word "Orchard" in Traditional Chinese (Left) and Simplified Chinese characters (Right). 35

Figure 2-23. LVMH sales revenue in first half of 2007 [Louis Vuitton . Moet Hennessy, 2007:6 - 9] 36

Figure 3-1. Timeline of the primary and secondary research process. 40

Figure 3-2. Visual format analysis structure [Warell, 2001:113] 41

Figure 3-3. Summary of visual elements of the 320i based on automotive design conventions [based on 43

Figure 3-4. Analysis of the surface tension on the BMW 320i to understand surface complexity 44

Figure 3-5. Table illustrating the visual signifiers intended by BMW.. 46

Figure 3-6. Comparative examination the Kidney Grille as a brand-specific feature adoption across BMW models. 47

Figure 3-7. Comparative examination of the Quad Headlights as a brand-specific feature adoption across BMW models. 48

Figure 3-8. Summary of visual elements of the IS250 based on automotive design conventions [based on analysis structure by Warell, 2001]. 49

Figure 3-9. Analysis of the surface tension on the Lexus IS250 to understand surface complexity. 50

Figure 3-10. Table illustrating the visual signifiers intended by Lexus. 53

Figure 3-11. Study of brand-specific elements across Lexus models. 54

Figure 3-12. Study of brand-specific elements across Lexus models. 55

Figure 3-13. Description of research aim analyses for questionnaire design. 59

Figure 3-14. Description of questionnaire section design.............................. 61

Figure 5-1. Relationship diagram between the various comparative discussions and the research questions. 75

Figure 5-2. Description of the colour coding on text in the analysis and comparison tables.............................. 76

Figure 5-3. Design analysis of 320i on the flow of lines and line transitions. 78

Figure 5-4. Features on 320i indicated as Simple/Clean in New Zealand. 79

Figure 5-5. Features on the 320i indicated as Harmonious/Flowing in New Zealand. 80

Figure 5-6. Features on the 320i indicated as Consistent/Uniform in New Zealand.... 81

Figure 5-7. Features on the 320i indicated as Distinctive/Well-defined in New Zealand. 83

Figure 5-8. Features on the 320i indicated as Balanced/Proportional in 84

Figure 5-9. Features on the 320i indicated as Harmonious/Flowing in New Zealand. 85

Figure 5-10. Features on the 320i indicated as Brand-specific in New Zealand.......... 86

Figure 5-11. Features on the 320i indicated as Modern in New Zealand. 88

Figure 5-12. Features on the 320i indicated as Comfortable in New Zealand.............89

Figure 5-13. Features on the 320i indicated as Desirable in New Zealand. 90

Figure 5-15. Features on the 320i indicated as Elegant in New Zealand. 92

Figure 5-16. Features on the 320i indicated as Dynamic in New Zealand....................93

Figure 5-17. Features on the 320i indicated as Simple/Clean in Taiwan. 97

Figure 5-18. Features on the 320i indicated as Harmonious/Flowing in Taiwan. 98

Figure 5-19. Features on the 320i indicated as Sleek/Elegant in Taiwan.......................99

Figure 5-20. Features on the 320i indicated as Balanced/Proportional in Taiwan. .. 101

Figure 5-21. Features on the 320i indicated as Distinctive/Well-defined in Taiwan.. 102

Figure 5-22. Features on the 320i indicated as Brand-specific in New Zealand. 103

Figure 5-23. Features on the 320i indicated as Modern in Taiwan. 104

Figure 5-24. Features on the 320i indicated as Modern in Taiwan. 105

Figure 5-25. Features on the 320i indicated as Desirable in Taiwan........................... 106

Figure 5-26. Features on the 320i indicated as Elegant in Taiwan.............................. 108

Figure 5-27. Features on the IS250 indicated as Simple/Clean in New Zealand....... 111

Figure 5-28. Features on the IS250 indicated as Sleek/Elegant in New Zealand. 112

Figure 5-29. Features on the IS250 indicated as Balanced/Proportional in New Zealand. 113

Figure 5-30. Features on the IS250 indicated as Beautiful/Stunning in New Zealand. 115

Figure 5-31. Features on the IS250 indicated as Ugly/Non-appealing in New Zealand. 116

Figure 5-32. Features on the IS250 indicated as Brand-specific in New Zealand. 117

Figure 5-33. Features on the IS250 indicated as Simplistic in New Zealand. 118
Figure 5-34. Features on the IS250 indicated as Luxurious in New Zealand. 119
Figure 5-35. Features on the IS250 indicated as Stylish in New Zealand. 120
Figure 5-36. Features on the IS250 indicated as Harmonious/Flowing in Taiwan. 124
Figure 5-37. Features on the IS250 indicated as Simple/Clean in Taiwan. 125
Figure 5-38. Features on the IS250 indicated as Sleek/Elegant in Taiwan. 126
Figure 5-39. Features on the IS250 indicated as Consistent/Uniform in Taiwan. 128
Figure 5-40. Features on the IS250 indicated as Brand-specific in Taiwan. 129
Figure 5-41. Features on the IS250 indicated as Simple in Taiwan. 131
Figure 5-42. Features on the IS250 indicated as Sporty in Taiwan. 132
Figure 5-43. Features on the IS250 indicated as Confident in Taiwan. 133
Figure 5-44. Features on the IS250 indicated as Distinctive in Taiwan. 135
Figure 5-45. Feature associated as brand-specific in New Zealand. 157
Figure 5-46. Features associated as brand-specific in Taiwan. 157
Figure 5-47. Indications on the expression 'Sporty' on the 320i in New Zealand. 158
Figure 5-48. Indications on the expression 'Sporty' on the 320i in Taiwan. 158
Figure 5-49. Features perceived as brand-specific in NZ. 161
Figure 5-50. Features perceived as brand-specific in Taiwan. 161
Figure 5-51. Indications on the expression 'Distinctive' on the IS250 in New Zealand. 162
Figure 5-52. Indications on the expression 'Distinctive' on the IS250 in New Zealand. 162
Figure 6-1. Features perceived as BMW-specific between the markets 166
Figure 6-2 Features perceived as brand-specific between the markets (left: New Zealand. Right: Taiwan). 166

Appendices

Figure A-1. Glossary – terms and definition...A-3
Figure F-1. Common imagery used in both the 320i and IS250 questionnaires aiming for the questions regarding the model distinctiveness and attractiveness (Left: page1, right: page 2..A-17
Figure F-2. Visual imagery of the 320i for the semi-structured interview.................A-18
Figure F-3. Page 1, section 1 of the BMW 320i questionnaire...............................A-19
Figure F-4. Page 2, section 2 of the BMW 320i questionnaire...............................A-19
Figure F-5. Page 3, section 3 of the BMW 320i questionnaire...............................A-20
Figure F-6. Page 4, section 3 of the BMW 320i questionnaire...............................A-20
Figure F-7. Page 5, section 4 of the BMW 320i questionnaire...............................A-21
Figure F-8. Page 6, section 4 of the BMW 320i questionnaire...............................A-21
Figure F-9. Page 7, section 5 of the BMW 320i questionnaire...............................A-22
Figure F-10. Page 8, section 5 of the BMW 320i questionnaire.............................A-22
Figure F-11. Visual imagery of the 320i for the semi-structured interview..............A-23
Figure F-12. Page 1, section 1 of the BMW 320i questionnaire.............................A-24
Figure F-13. Page 2, section 2 of the BMW 320i questionnaire.............................A-24
Figure F-14. Page 3, section 3 of the BMW 320i questionnaire.............................A-25
Figure F-15. Page 4, section 3 of the BMW 320i questionnaire.............................A-25

Figure F-16. Page 5, section 4 of the BMW 320i questionnaire..............................A-26
Figure F-17. Page 6, section 4 of the BMW 320i questionnaire..............................A-26
Figure F-18. Page 7, section 5 of the BMW 320i questionnaire..............................A-27
Figure F-19. Page 8, section 5 of the BMW 320i questionnaire..............................A-27
Figure F-20. Visual imagery of the IS250 for the semi-structured interview..............A-28
Figure F-21. Page 1, section 1 of the Lexus IS250 questionnaire...........................A-29
Figure F-22. Page 2, section 2 of the Lexus IS250 questionnaire............................A-29
Figure F-23. Page 3, section 3 of the Lexus IS250 questionnaire............................A-30
Figure F-24. Page 4, section 3 of the Lexus IS250 questionnaire............................A-30
Figure F-25. Page 5, section 4 of the Lexus IS250 questionnaire............................A-31
Figure F-26. Page 6, section 4 of the Lexus IS250 questionnaire............................A-31
Figure F-27. Page 7, section 5 of the Lexus IS250 questionnaire............................A-32
Figure F-28. Page 8, section 5 of the Lexus IS250 questionnaire............................A-32
Figure F-29. Visual imagery of the IS250 for the semi-structured interview..............A-33
Figure F-30. Page 1, section 1 of the Lexus IS250 questionnaire............................A-34
Figure F-31. Page 2, section 2 of the Lexus IS250 questionnaire............................A-34
Figure F-32. Page 3, section 3 of the Lexus IS250 questionnaire............................A-35
Figure F-33. Page 4, section 3 of the Lexus IS250 questionnaire............................A-35
Figure F-34. Page 5, section 4 of the Lexus IS250 questionnaire............................A-36
Figure F-35. Page 6, section 4 of the Lexus IS250 questionnaire............................A-36
Figure F-36. Page 7, section 5 of the Lexus IS250 questionnaire............................A-37
Figure F-37. Page 8, section 5 of the Lexus IS250 questionnaire............................A-37
Figure G-1. Features appreciated by New Zealand consumers as distinctive/well-defined (left)..........A-42
Figure G-2. Features appreciated by New Zealand consumers as consistent/uniform (right)..........A-42
Figure G-3. Features appreciated by New Zealand consumers as harmonious/flowing (left)..........A-43
Figure G-4. Features appreciated by New Zealand consumers as beautiful/stunning (right)..........A-43
Figure G-5. Features appreciated by New Zealand consumers as interesting/fascinating (left)..........A-44
Figure G-6. Features appreciated by New Zealand consumers as ugly/non-appealing (right).......... A-44
Figure G-7. Features appreciated by New Zealand consumers as balanced/proportional (left)..........A-45
Figure G-8. Features appreciated by New Zealand consumers as sleek/elegant (right)..........A-45
Figure G-9. Features appreciated by New Zealand consumers as simple/clean...A-46
Figure G-10. Features comprehended by New Zealand consumers as Dynamic (left)..........A-47
Figure G-11. Features comprehended by New Zealand consumers as Versatile (right)..........A-47
Figure G-12. Features comprehended by New Zealand consumers as Elegant (left)..........A-48
Figure G-13. Features comprehended by New Zealand consumers as Modern

(right)....A-48

Figure G-14. Features comprehended by New Zealand consumers as Desirable (left)....A-49

Figure G-15. Features comprehended by New Zealand consumers as Sporty (right)....A-49

Figure G-16. Features comprehended by New Zealand consumers as Comfortable (left)....A-50

Figure G-17. Features associated by New Zealand consumers as Brand-specific (right)....A-51

Figure G-18. Features appreciated by Taiwan consumers as distinctive/well-defined (left)....A-56

Figure G-19. Features appreciated by Taiwan consumers as consistent/uniform (right)....A-56

Figure G-20. Features appreciated by Taiwan consumers as harmonious/flowing (left)....A-57

Figure G-21. Features appreciated by Taiwan consumers as beautiful/stunning (right)....A-58

Figure G-22. Features appreciated by Taiwan consumers as interesting/fascinating (left)....A-58

Figure G-23. Features appreciated by Taiwan consumers as ugly/non-appealing (right)....A-58

Figure G-24. Features appreciated by Taiwan consumers as balanced/proportional (left)....A-59

Figure G-25. Features appreciated by Taiwan consumers as sleek/elegant (right)....A-59

Figure G-26. Features appreciated by Taiwan consumers as distinctive/well-defined (left)....A-60

Figure G-27. Features comprehended by Taiwan consumers as Dynamic (left).....A-61

Figure G-28. Features comprehended by Taiwan consumers as Versatile (right)...A-61

Figure G-29. Features comprehended by Taiwan consumers as Elegant (left)......A-62

Figure G-30. Features comprehended by Taiwan consumers as Modern (right)....A-62

Figure G-31. Features comprehended by Taiwan consumers as Desirable (left)....A-63

Figure G-32. Features comprehended by Taiwan consumers as Sporty (right).......A-63

Figure G-33. Features comprehended by Taiwan consumers as Comfortable (left)....A-64

Figure G-34. Features associated by Taiwan consumers as Brand-specific (right)...A-64

Figure G-35. Features appreciated by New Zealand consumers as distinctive/well-defined (left)....A-68

Figure G-36. Features appreciated by New Zealand consumers as consistent/uniform (right)....A-68

Figure G-37. Features appreciated by New Zealand consumers as harmonious/flowing (left)....A-69

Figure G-38. Features appreciated by New Zealand consumers as beautiful/stunning (right)....A-69

Figure G-39. Features appreciated by New Zealand consumers as interesting/fascinating (left)....A-70

Figure G-40. Features appreciated by New Zealand consumers as ugly/non-appealing (right)....A-70
Figure G-41. Features appreciated by New Zealand consumers as balanced/proportional (left)....A-71
Figure G-42. Features appreciated by New Zealand consumers as sleek/elegant (right)....A-71
Figure G-43. Features appreciated by New Zealand consumers as simple/clean (left)....A-72
Figure G-44. Features comprehended by New Zealand consumers as Luxury (left)....A-73
Figure G-45. Features comprehended by New Zealand consumers as Sporty (right)....A-73
Figure G-46. Features comprehended by New Zealand consumers as Distinctive (left)....A-74
Figure G-47. Features comprehended by New Zealand consumers as Confident (right)....A-74
Figure G-48. Features comprehended by New Zealand consumers as Simple (left)....A-75
Figure G-49. Features comprehended by New Zealand consumers as Style (right)....A-75
Figure G-50. Features comprehended by New Zealand consumers as Evocative (left)....A-76
Figure G-51. Features associated by New Zealand consumers as Brand-specific (right)....A-76
Figure G-52. Features appreciated by Taiwan consumers as distinctive/well-defined (left)....A-81
Figure G-53. Features appreciated by Taiwan consumers as consistent/uniform (right)....A-81
Figure G-54. Features appreciated by Taiwan consumers as harmonious/flowing (left)....A-82
Figure G-55. Features appreciated by Taiwan consumers as beautiful/stunning (right)....A-82
Figure G-56. Features appreciated by Taiwan consumers as interesting/fascinating (left)....A-83
Figure G-57. Features appreciated by Taiwan consumers as ugly/non-appealing (right)....A-83
Figure G-58. Features appreciated by Taiwan consumers as balanced/proportional (left)....A-84
Figure G-59. Features appreciated by Taiwan consumers as sleek/elegant (right)....A-84
Figure G-60. Features appreciated by Taiwan consumers as simple/clean (left)...A-85
Figure G-61. Features comprehended by Taiwan consumers as Luxury (left)....A-86
Figure G-62. Features comprehended by Taiwan consumers as Sporty (right)....A-86
Figure G-63. Features comprehended by Taiwan consumers as Distinctive (left)...A-87
Figure G-64. Features comprehended by Taiwan consumers as Confident (right).A-87
Figure G-65. Features comprehended by Taiwan consumers as Simple (left)....A-88

Figure G-66. Features comprehended by Taiwan consumers as Style (right).........A-88

Figure G-67. Features comprehended by Taiwan consumers as Evocative (left)...A-89

Figure G-68. Features associated by Taiwan consumers as Brand-specific (right)...A-89

LIST OF TABLES

Table 2-1. Key principles of Gestalt theory in formal aesthetics and relation to automotive design [Monö, 1997:35]. NOTE:: Descriptions on the principles adopted from Monö, but original theory by Marcel (1993). 8

Table 2-2. Semantic design functions by Monö (1997) and its relation to automotive design. 13

Table 2-3. Types of signs in meaning interpretation [Monö, 1997:53-55]. 14

Table 2-4. Brand-specific features of BMW with intentions or descriptions from BMW USA (2007) 22

Table 2-5. Expressions used by BMW on the model 320i [BMW, 2007] 22

Table 2-6. List of model-specific features of the 320i and intentions proposed by BMW. 23

Table 2-7. Brand-specific features of Lexus with intentions or descriptions. 27

Table 2-8. Expressions use by Lexus for marketing the IS250. 29

Table 2-9. Brand-specific features on the IS250 proposed by Lexus. 29

Table 2-10. Summary of findings on the 320i/IS250 based on secondary research.... 31

Table 2-11. Summary of consumption behaviour in Australia and New Zealand. [Schwartz, 1992] 32

Table 2-12. Comparative background summary of New Zealand and Taiwan. 38

Table 2-13. Findings summaries on New Zealand's and Taiwan's cultural identity..... 38

Table 3-1. Brand-specific features of the BMW 320i with official intentions or descriptions [BMW USA, 2007]. 45

Table 3-2. Brand-specific features of the Lexus IS250 with intentions or descriptions from Lexus (2007) 52

Table 3-3. Findings comparison of form elements between the 320i and IS250. 56

Table 3-4. Research question analyses for questionnaire design for field research....58

Table 3-5. Research design section 1: Participant background. 62

Table 3-6. Research design section 2: Brand Impression. 63

Table 3-7. Research design section 3: Model Expression. 64

Table 3-8. Research design section 4: Model Appreciation. 65

Table 3-9. Research design section 5: Model expression. 66

Table 5-1. Findings on highly appreciated qualities on VAS. 78

Table 5-2. Strongly ranked (1st) attributes on the 320i by New Zealand participants.79

Table 5-3. Strongly ranked (2nd) attributes on the 320i by New Zealand participants. 80

Table 5-4. Strongly ranked attributes on the 320i by New Zealand participants. 81

Table 5-5. Comparison between the visual attributes of the feature and terms appreciated with the feature. 82

Table 5-6. Findings on highly appreciated attributes on pictogram. 82

Table 5-7. Strongly indicated (1st) attributes on the 320i by New Zealand participants. 83

Table 5-8. Strongly indicated (2nd) attributes on the 320i by New Zealand participants. 84

Table 5-9. Strongly indicated (3rd) attributes on the 320i by New Zealand participants. 85

Table 5-10. The strongest expression on pictogram findings of brand-specific associations on the 320i by New Zealand participants. 86

Table 5-11. Strongly associated terms from VAS outcomes........ 87

Table 5-12. Strongly comprehended (1st) expression on VAS and features indicated from the pictogram findings on the 320i by New Zealand participants. 88

Table 5-13. Strongly comprehended (2nd) expression on VAS and features indicated from the pictogram findings on the 320i by New Zealand participants. 89

Table 5-14. Strongly comprehended (3rd) expression on VAS and features indicated from the pictogram findings on the 320i by New Zealand participants. 90

Table 5-15. Comparison between the physical attributes of the feature and the terms comprehended with the front grille area. 91

Table 5-16. Comparison between the physical attributes of the feature and the terms associated with the design of 320i as whole. 91

Table 5-17. Strongly comprehended (2nd) expressions on the 320i by New Zealand participants. 92

Table 5-18. Strongly comprehended (3rd) expressions on the 320i by New Zealand participants. 93

Table 5-19. The most attractive cars indicated in Taiwan based on selections of seven premium cars. 95

Table 5-20. Finding on highly appreciated qualities on the analogue scale and pictogram........ 96

Table 5-21. Strongly ranked (1st) attributes on the 320i by Taiwan participants. 97

Table 5-22. Strongly ranked and indicated (2nd) attributes on the 320i by Taiwan participants. 98

Table 5-23. Strongly ranked (3rd) attribute on the 320i by Taiwan participants. 99

Table 5-24. Comparison between the physical attributes of the feature and the terms appreciated with the front grille area. 100

Table 5-25. Comparison between the physical attributes of the feature and terms appreciated with the front grille area. 100

Table 5-26. Strongly indicated (2nd) attributes on the 320i by Taiwan participants. 101

Table 5-27. Strongly ranked (3rd) attributes on the 320i by Taiwan participants. 102

Table 5-28. The strongest expression on the pictogram findings, the brand-specific associations of the 320i by Taiwan participants........ 103

Table 5-29. Strongly comprehended (1st) expression on VAS, and features indicated from the pictogram findings on the 320i by Taiwan participants. 104

Table 5-30. Strongly comprehended (2nd) expression on VAS/Pictogram, and features indicated from the pictogram findings on the 320i by Taiwan participants. 105

Table 5-31. Strongly comprehended (3rd) expression on VAS and features indicated from the pictogram findings on the 320i by Taiwan participants. 106

Table 5-32. List of expressions comprehended with the overall design of 320i as the strongest feature perceived by Taiwan consumers. 107

Table 5-33. Strongly comprehended (3rd) expression on pictogram and features indicated from the pictogram findings on the 320i by Taiwan participants. 108

Table 5-34. The top three most appealing car designs based on selections from seven cars targeting the same market segment. 110
Table 5-35. Findings on highly appreciated qualities on the analogue scale and pictogram. 110
Table 5-36. Strongly appreciated (1st) visual attributes on VAS and features indicated from the pictogram findings on the IS250 by New Zealand participants. 111
Table 5-37. Strongly appreciated (2nd) visual attributes on VAS/Pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 112
Table 5-38. Strongly appreciated (3rd) visual attributes on VAS/Pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 113
Table 5-39. List of attributes appreciated with the overall design of the IS250 as the strongest feature perceived by New Zealand consumers. 114
Table 5-40. Strongly appreciated (1st) visual attributes on pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 115
Table 5-41. Strongly appreciated (2nd) visual attributes on pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 116
Table 5-42. Features indicated as 'Brand-specific' on the IS250 by New Zealand participants. 117
Table 5-43. Strongly comprehended (1st) visual attributes on pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 118
Table 5-44. Strongly comprehended (2nd) visual attributes on pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 119
Table 5-45. Strongly comprehended (3rd) visual attributes on pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 120
Table 5-46. List of attributes comprehended with the overall design of the IS250 as the strongest feature perceived by New Zealand consumers. 121
Table 5-47. Top three most appealing cars based on selections of seven cars targeting the same market segment as the 320i and IS250. 123
Table 5-48. Findings on the highly appreciated qualities on analogue scale and pictogram. 123
Table 5-49. Strongly appreciated (1st) visual attributes on VAS/pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 124
Table 5-50. Strongly appreciated (2nd) visual attributes on VAS/pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 125

Table 5-51. Strongly appreciated (3rd) visual attributes on VAS and features indicated from the pictogram findings on the IS250 by New Zealand participants. 126

Table 5-52. List of attributes appreciated with the continuous line on the IS250 as the strongest feature perceived by Taiwan consumers. 127

Table 5-53. Strongly appreciated (3rd) visual attributes on pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 128

Table 5-54. Features indicated as 'Brand-specific' on the IS250 by New Zealand participants. 129

Table 5-55. Strongly comprehended expressions on the VAS and Pictogram outcomes from Taiwan consumers. 130

Table 5-56. Strongly comprehended (1st) visual attributes on VAS/Pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 131

Table 5-57. Strongly comprehended (2nd) visual attributes on VAS/Pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants. 132

Table 5-58. Strongly comprehended (3rd) visual attributes on VAS and features indicated from the pictogram findings on the IS250 by New Zealand participants. 133

Table 5-59. List of expressions comprehended with the continuous line on the IS250 as the strongest feature perceived by Taiwan consumers. 134

Table 5-60. List of expressions comprehended with the continuous line on the IS250 as the strongest feature perceived by Taiwan consumers. 134

Table 5-61. Strongly comprehended (3rd) visual attributes on Pictogram and features indicated from the pictogram findings on the IS250 by New Zealand participants 135

Table 5-62. Summary of the main preferences of dream car from New Zealand consumers. 136

Table 5-63. Brand impression between BMW and Lexus findings from New Zealand. 137

Table 5-64. Brand recognition between BMW and Lexus findings from New Zealand. 137

Table 5-65. Model appreciation between BMW and Lexus findings from New Zealand. 137

Table 5-66. Model appreciation between BMW and Lexus findings from New Zealand. 138

Table 5-67. Brand and model association between BMW and Lexus in New Zealand. 140

Table 5-68. List of visual features indicated as Brand-specific in New Zealand. 140

Table 5-69. Model comprehension between BMW and Lexus findings from New Zealand. 142

Table 5-70. Summary of the main preferences of dream cars from Taiwan consumers. 143

Table 5-71. Brand impression between BMW and Lexus findings. 143

Table 5-72. Brand recognition between BMW and Lexus findings in Taiwan............. 144
Table 5-73. Model appreciation between BMW and Lexus in Taiwan. 144
Table 5-74. Model appreciation between BMW and Lexus findings from Taiwan.... 146
Table 5-75. Brand/model appreciation between BMW and Lexus in Taiwan. 147
Table 5-76. Model association on Brand-specific features indicated between BMW and Lexus in Taiwan. 147
Table 5-77. Model comprehension between BMW and Lexus outcomes in Taiwan.149
Table 5-78. External perceptions on the BMW 320i between New Zealand and Taiwan. 156
Table 5-79. Indication of intended feature types on visual elements with the findings. 156
Table 5-80. List of intended expressions on the 320i and any related design features. 158
Table 5-81. External perceptions on the Lexus IS250 between New Zealand and Taiwan. 160
Table 5-82. Indication of intended feature types on visual elements with the findings. 160
Table 5-83. Expressions intended by Lexus and any correlated features.................. 162
Table 6-1. List of features strongly perceived as characteristic for the 320i/IS250 in both markets. 165
Table 6-2. List of features strongly interpreted as expressive for the 320i/IS250 in both markets. 165
Table 6-3. List of potential further research topics... 169

Appendices

Table B-1. Summary of designers and artists opinion on the looks of the new BMW designs [Cox, n.d]...A-5
Table E-01. Definition and relation to physical attribute principles of the 9 categories on physical description...A-13
Table E-02. Expression terms from BMW with description and relation to the Gestalt theory..A-14
Table E-03. Expression terms from Lexus with description and relation to the Gestalt theory..A-15
Table G-1. Questionnaire outcome of the BMW 320i from the New Zealand study...A-39
Table G-2. Questionnaire outcome of the BMW 320i from the Taiwan study.........A-51
Table G-3. Questionnaire outcome of the Lexus IS250 from the New Zealand study...A-65
Table G-4. Questionnaire outcome of the Lexus IS250 from the Taiwan study.......A-77
Table H-01. Summary of findings of Section 1 on the participant backgrounds of BMW 320i in New Zealand market..A-91
Table H-02. Summary of findings of Section 2 on the brand preceptionof BMW 320i in New Zealand market...A-91
Table H-03. Summary of findings of Section 3 on the model impression of BMW 320i in New Zealand market...A-92
Table H-04. Summary of findings of Section 4 on the model appreciation of BMW 320i in New Zealand market...A-93

Table H-05. Summary of findings of Section 5 on the model expression of BMW 320i in New Zealand market........A-94

Table H-06. Summary of findings of Section 1 on the participant backgrounds of BMW 320i in Taiwan market........A-95

Table H-07. Summary of findings of Section 2 on the brand perceptions of BMW 320i in Taiwan market........A-95

Table H-08. Summary of findings of Section 3 on the model impression of BMW 320i in Taiwan market........A-96

Table H-09. Summary of findings of Section 4 on the model appreciation of BMW 320i in Taiwan market........A-97

Table H-10. Summary of findings of Section 5 on the model expression of BMW 320i in Taiwan market........A-98

Table H-11. Summary of findings of Section 1 on participant background of Lexus IS250 in New Zealand market........A-99

Table H-12. Summary of findings of Section 2 on the brand perceptions of Lexus IS250 in New Zealand market........A-99

Table H-13. Summary of findings of Section 3 on the model impression of Lexus IS250i in New Zealand market........A-100

Table H-14. Summary of findings of Section 4 on the model appreciation of BMW 320i in Taiwan market........A-101

Table H-15. Summary of findings of Section 5 on the model expression of Lexus IS250 in New Zealand market........A-102

Table H-16. Summary of findings of Section 1 on participant background of Lexus IS250 in Taiwan market........A-103

Table H-17. Summary of findings of Section 2 on the brand perceptions of Lexus IS250 in New Zealand market........A-104

Table H-18. Summary of findings of Section 3 on the model impression of Lexus IS250i in New Zealand market........A-105

Table H-19. Summary of findings of Section 4 on the model appreciation of BMW 320i in Taiwan market........A-106

Table H-20. Summary of findings of Section 5 on the model expression of Lexus IS250 in New Zealand market........A-107

Table I-1. Top three most distinctive cars based on selections of seven cars targeting same market segment........A-109

Table I-2. Top three most attractiveness cars based on selections of seven cars targeting same market segment........A-110

Table I-3. Top three most distinctiveness cars based on selections of seven cars targeting same market segment........A-112

Table I-4. Top three most distinctiveness cars based on selections of seven cars targeting same market segment........A-115

Table I-5. Top three most distinctive cars based on selections of seven cars targeting same market segment........A-117

Chapter 1. INTRODUCTION

In the contemporary global economy, designing for markets with different socio-cultural backgrounds has become a central issue for both product companies and industrial designers. This research seeks to examine the relationship in product perception and meaning between a Western and Eastern market, specifically focusing on automotive design. By further understanding the culturally influenced perception of motorcars, different characteristics on visually perceived meanings and preferences between these markets can be identified.

1.1 Background and significance

A vast amount of marketing-related research commissioned by product companies has been conducted to understand different market characteristics and consumer preference. The scope of such market research is often limited to overall consumer preferences, which require periodical updates to maximise product competitiveness. Moreover, the reasoning and meaning behind aesthetic preferences has not been the focus of most of this marketing research.

The field of research that studies the relationship between human perceptions on products is still in its infancy compared to other related academic fields of arts, marketing and psychology. This topic is, however, gaining increasing interest amongst academics, industries, designers, and design schools around the world. This all-round interest has grown in importance in the light of academic research which offers more authority to designers' communication and design decision-making; a decision-making process which has up to now relied upon the designer's subjective reasoning to support her/his own preferences and opinions.

Within newly established theories and research on product meaning and perception, few [e.g. Fjellner, Stridsman-Dahlstrom, 2004] have investigated the relationship between internal and external perceptions and meanings in product design. This comparative research study focuses on car design and markets in New Zealand and Taiwan. It will focus on mapping the visual features of two cars with a different design focus, but from the same market range for compatibility. As a basis for the design and discussion of the primary research, the market profile of the 320i and BMW will be compared against the IS250 and Lexus.

In this study, the word **"Consumer"** refers to members of the public who might experience the products, either through visual perception or physical interaction, but not necessarily owning the product. This research aims to examine the visual experience of perception and meaning on automotive exteriors. **"Experience"** is the process through time whereby people encountered the event which resulted a psychological reaction. This process contributes to people's memories of a particular feeling that occurred through the event, and contributes to their impression of the process.

1.2 Central proposition

The central proposition of this research states that cultural values have a major influence on the process of meaning and perception in cars. This project will cover two aspects of the meaning in design; this includes the intended meaning from the car manufacturers, and the perceived meaning of exterior design on consumers. To understand the various aspects of perception and meaning of automotive designs, a framework is required to allow the analysis and identification of the intended meanings at various levels, including formal aesthetics and design semantics. This research adopts the Visual Product Experience (VPE) framework by Warell (2007) as its base structure.

1.3 Research aim

The aim of this study is to examine and evaluate the relationship between product meaning and visual perception of two automotive designs in two markets. An important aspect of the literature review is to identify theories and other frameworks on the topic of design semantics as the basis for this research.

This research seeks to address the following questions:

- What visual elements are perceived as signifiers (i.e. carry meaning) and what meanings are conveyed by those visual elements?
- How are the two cars perceived and interpreted in the two markets?
- What visual elements are perceived as characteristic for the selected models (i.e. are visually distinctive)?
- Are there any differences in perception and meaning in different markets? What are those differences?
- What are the intended messages and aesthetic qualities from the point of view of the manufacturers (i.e. the internal design intent)?
- Do internal intentions and external perceptions map? What are the differences and coherencies?
- What are the implications for design?

1.4 Scope of research

This research project is limited to assessing the differences in the perceived meanings of two cars for consumers based in different cultures. The selection of cars for this research is based on the differences in their associated brand heritage and design focus. The selected car models are the 320i by German car maker BMW, and the IS250 from Japanese car maker Lexus. The chosen countries for this study are New Zealand and Taiwan. This selection of New Zealand is due to its significance as a Western country, and the ease of access to local literature and participant groups. Similarly, the selection of Taiwan is based on its Confucius-influenced socio-cultural background and the geographical and language differences to New Zealand.

The selected focus participant group is car enthusiasts due to their potential interest and likelihood of having good levels of knowledge in the design and styling of cars. Although it is desirable to study perception from a targeted consumer group, this particular group is not included in this research as the project's aim is to study the relationship between meaning and perception of cars in different markets. This exclusion is also due to potential responses bias if the participant groups are included on the customer database from a premium car brand. Also the accessibility to the database of the targeted consumers raised issues over customer privacy.